

CHAPTER 3.7

Public Utilities, Service Systems, and Energy

This Chapter examines the potential for the Scott River Watershed-wide Permitting Program (Program) to adversely affect public utilities, service systems, and energy generation and consumption, and identifies mitigation measures for those impacts determined to be potentially significant.

3.7.1 Setting

The Program is located entirely within the Scott River watershed (Program Area) within Siskiyou County, California. As mentioned earlier in Chapter 3.1, the incorporated cities of Etna and Fort Jones, as well as the unincorporated towns of Callahan and Greenview are not participating in the Program. The Scott River Valley is served by several public utilities and service systems, described below.

Water

The Program Area consists of rural agricultural landscapes and forested uplands. Residential and commercial developments are scattered and of low density throughout the agricultural areas, and even more sparse in the forested areas. Much of the high country in the mountains to the west and south of the Scott Valley are federally-designated wilderness areas. There is no water district or other public entity that supplies domestic water to residences and businesses in the Program Area (though the Callahan Water District provides domestic water to the town of Callahan and adjacent areas); rather, these are served by private wells and other water systems. Water wells are permitted by the Siskiyou County Public Health Department.

Water for irrigation is from two primary sources: surface water diversions and groundwater (see Chapter 3.1). Most surface water diversions use a system of seasonal checkdams, headgates, and ditches to convey water by gravity from the stream of origin to the point of use. **Figure 3.7-1** shows the mapped ditch network in the Program Area. Most of these systems are owned and operated by a single landowner or a small group of landowners who manage the system on an informal, cooperative basis. The largest of these informally organized systems is the Farmers Ditch Company.

The Farmers Ditch Company is formed by an unincorporated group of 11 ranchers.¹ Each is signatory to a ditch agreement that establishes the Ditch Company and spells out rights and responsibilities of the members. Under the Scott River Decree (1980), the Farmers Ditch can

¹ This description of the Farmers Ditch is based on Spencer, 2007.

divert up to 30 cubic feet per second (cfs) of water from the Scott River from April 15 until about October 15; during the remainder of the year diversion is allowed for stock-watering only. The point of diversion is on the upper reach of the Scott River, just below Callahan, within the tailings (Figure 3.7-1). The headworks consist of a seasonally-constructed gravel push-up dam that spans the Scott River. The California Department of Fish and Game (CDFG) and Siskiyou Resource Conservation District (SQRCD) are currently working with the Farmers Ditch Company to replace the gravel push-up dam with a series of boulder vortex weirs to enable fish passage.

The ditch itself is about 11 miles long, running along the foot of the hills on the east side of the Scott Valley to maintain sufficient gradient for gravity flow. The Ditch Company has easements for the length of the ditch alignment. Water from the ditch is used to irrigate 1,283 acres, about half of which is irrigated pasture and the other half alfalfa and other hay crops. All of the fields irrigated from the Farmers Ditch are flood irrigated, with the exception of one ranch that stores water from the ditch in a reservoir and uses sprinklers to irrigate 160 acres. The ditch ends near the Scott Valley Irrigation District (SVID) dam (Young's Dam); any water remaining in the ditch at its terminus flows into the SVID ditch.

Based on a 183-day diversion season for irrigation, a constant flow rate of 30 cfs would convey approximately 11,000 acre feet of water in one year. Typically, however, summer reduction in base river flow limits diversion volume to 20 to 25 cfs in August and September, so the actual volume diverted would be somewhat less than this. Loss from seepage and evaporation is thought to be minor, and is estimated at five to seven percent (Spencer, 2007).

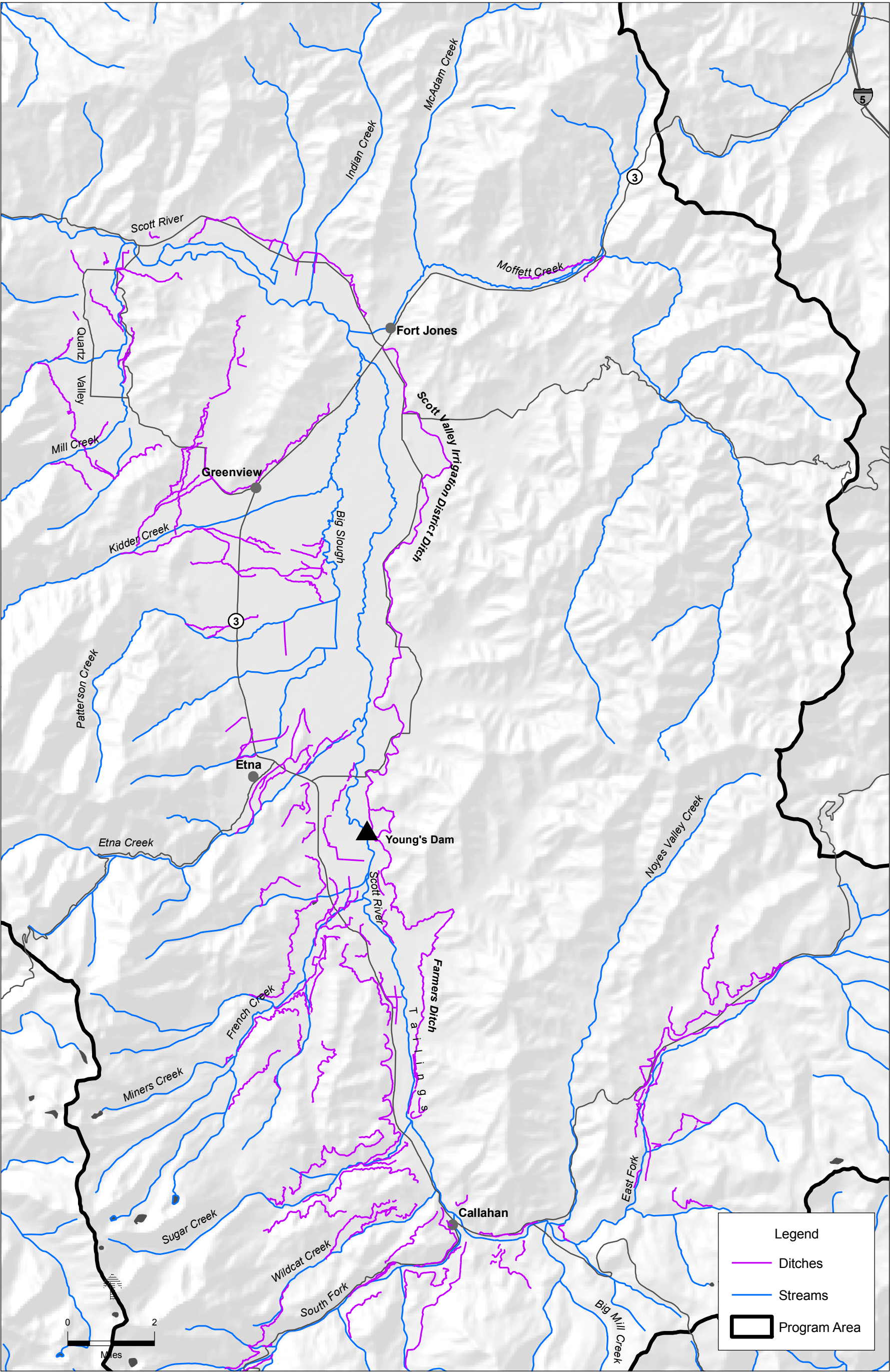
Members of the Farmers Ditch Company pay a share of the costs of maintaining the system, based on the volume of water they are entitled to under the Scott River Decree and the distance from the point of diversion down the ditch to their turnout. Annual expenses for the Ditch Company are typically \$10,000–\$12,500, and include construction and maintenance of the headworks and cleaning the ditch. The ditch is cleaned annually to remove vegetation and accumulated sediment. This is accomplished by running a backhoe or excavator along its length.

Scott Valley Irrigation District

The SVID is the only formal Special District² providing irrigation water in the Program Area.³ SVID was organized in 1921, and has operated continuously since then. The District has an elected Board of Directors. Revenues are from fees paid by members of the District; Siskiyou County also provides some funds and the District is eligible for some state grant funding. The Board of Directors adopts a budget annually; typically annual budgets are in the range of \$40,000 – \$50,000 in revenue and expenses.

² State law defines a special district as "any agency of the state for the local performance of governmental or proprietary functions within limited boundaries" (Gov. Code, § 16271(d)). A special district is a separate local government, formed by residents or landowners, which delivers specified public services to a particular area.

³ This description of the SVID is based on Loudon, 2007.



Scott River Watershed-Wide Permitting Program . 206063
SOURCE: California Department of Fish and Game, 2007; ESA, 2007
Figure 3.7-1
Scott Valley Irrigation Ditches

The SVID delivers water to properties totaling about 3,300 acres, representing about 28 land owners. Some landowners use the water themselves, while some sell to others. Most of the members irrigate from a combination of water delivered by the District and groundwater. One member has a reservoir that is fed by the ditch. The District owns and maintains a 15-mile long ditch that begins at Young's Dam on the Scott River, and ends near the cemetery at Fort Jones.

Like the Farmers Irrigation Ditch, the SVID ditch runs along the base of the eastside hills at a gentle, constant gradient to maintain flow. In addition to water from the Scott River, the ditch picks up flows from tributary streams that drain into it. The ditch therefore also acts as a flood control channel, conveying tributary high flows down the Valley to Fort Jones. At the end of the ditch the water flows across fields and back into the Scott River. In 2006, high flows caused damage to the ditch in several places, necessitating costly repairs.

The SVID ditch diverts flows from the river at Young's Point. The Scott River Decree allotted SVID 62.5 cfs however, this was later reduced by the State Water Resources Control Board to 43 cfs. The rate of diversion is highest at the beginning of the season, and at the beginning of an allocation cycle to compensate for ditch loss. Each allocation cycle is about 14 days, and starts with delivery to the farthest downstream user on the ditch, then works upstream in sequence. Each user takes the full flow of the ditch for an allotted number of hours when it is their turn. It takes more water, and approximately 24-36 hours, for the water to reach the last user at the beginning of a cycle. After that there is not much loss from seepage.

Under the Scott River Decree the diversion season is April 15 to around October 15, but in some years there is not enough water in the Scott River to maintain flow into the ditch for the entire season. Over the past 10 years, the District's Operating Manager estimates that in only four years has the ditch run all season. In some years there is insufficient flow in the Scott River to maintain the diversion past June or July. When the ditch runs dry, most members switch to groundwater for irrigation. Were the ditch to run at the full allotment of 43 cfs continuously for the approximately 183 days of the diversion season, the total volume of water delivered would be about 15,400 acre feet.

Maintenance of the system consists chiefly of weed control within the ditch and on its banks. This is done through a combination of chemical weed suppression and mechanical removal using a backhoe on the bank. Aquatic vegetation tends to grow in the ditch over the course of the summer, reducing flow velocity and increasing seepage; chemical or other means are used to suppress vegetation growth. The ditch is cleaned on about a three-year cycle.

Sanitary Sewer

Within the unincorporated area of Siskiyou County, individual properties are serviced by on-site sewage disposal systems under permits issued by the Siskiyou County Public Health Department (Navarre, 2006). The Public Health Department follows a set of Sewage Disposal Codes that apply to all new construction, relocated buildings, and trailers and to all alterations, repairs, or reconstruction within the unincorporated area of the County (Siskiyou County, 2006).

Electricity and Natural Gas

Electrical service in the Program Area is provided by Pacific Power, a division of PacifiCorp. Siskiyou County does not have access to natural gas; however, several local companies provide propane to individual residences and businesses (Siskiyou County Economic Development Council, 2006).

Telephone and Communications

Telephone, cable, and high-speed internet services are provided in the Program Area by Siskiyou Communications, Inc., a locally-owned and operated company that was founded in 1896 (Siskiyou Communications, Inc., 2007). There are several long distance and wireless providers that service the area.

Solid Waste and Recycling Service

The Yreka Solid Waste Landfill in Yreka provides refuse disposal and recycling services to residents and businesses in the Program Area. This landfill currently has a remaining permitted capacity of approximately 4.7 million cubic yards and is not projected to reach capacity until 2065 (CIWMB, 2006a). Scott Valley Disposal provides refuse collection services in the Program Area.

3.7.2 Global Climate Change

The International Panel on Climate Change (IPCC) states that human activities contribute to climate change by causing changes in Earth's atmosphere in the amounts of greenhouse gases (GHGs), aerosols (small particles), and cloudiness (IPCC, 2007a). The largest known contribution comes from the burning of fossil fuels, which releases carbon dioxide gas to the atmosphere. GHGs and aerosols affect climate by altering incoming solar radiation and outgoing infrared (thermal) radiation that are part of Earth's energy balance. Changing the atmospheric abundance or properties of these gases and particles can lead to a warming or cooling of the climate system. Since the start of the industrial era (about 1750), the overall effect of human activities on climate has been a warming influence. The human impact on climate during this era greatly exceeds that due to known changes in natural processes, such as solar changes and volcanic eruptions (IPCC, 2007a).

Human activities result in emissions of four principal GHGs: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and the halocarbons (a group of gases containing fluorine, chlorine, and bromine). These gases are long-lived and accumulate in the atmosphere, causing concentrations to increase with time. Significant increases in all of these gases have occurred in the industrial era. All of these increases are attributable to human activities.

- Carbon dioxide has increased from fossil fuel use in transportation, building heating and cooling, and manufacturing. Deforestation releases CO₂ and reduces its uptake by plants. Carbon dioxide is also released in natural processes such as the decay of plant matter.

- Methane has increased as a result of human activities related to agriculture, natural gas distribution, and landfills. Methane is also released from natural processes that occur, for example, in wetlands. Methane concentrations are not currently increasing in the atmosphere because growth rates decreased over the last two decades, but current atmospheric levels are approximately three times higher than the pre-industrial period. Methane has an influence on climate (“global warming potential” or GWP) estimated to be 25 times that of CO₂ (IPCC, 2007a).
- Nitrous oxide is also emitted by human activities such as fertilizer use and fossil fuel burning. Natural processes in soils and the oceans also release N₂O. N₂O has a GWP 298 times that of CO₂ (IPCC, 2007a).
- Increases in halocarbon gas concentrations are primarily due to human activities, though natural processes are also a small source. Principal halocarbons include the chlorofluorocarbons (e.g., CFC-11 and CFC-12), which were used extensively as refrigeration agents and in other industrial processes before their presence in the atmosphere was found to cause stratospheric ozone depletion. The abundance of chlorofluorocarbon gases is decreasing as a result of international regulations designed to protect the ozone layer. These gases, however, have GWPs many hundreds or thousands of times that of CO₂. (IPCC, 2007a)

Some of the potential resulting effects in California of global warming may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (CARB, 2006). Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects (IPCC, 2007b):

- Higher maximum temperatures and more hot days over nearly all land areas;
- Higher minimum temperatures, fewer cold days and frost days over nearly all land areas;
- Reduced diurnal temperature range over most land areas;
- Increase of heat index over land areas; and
- More intense precipitation events.

There are many secondary effects that are projected to result from global warming, including global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the outcomes and the feedback mechanisms involved are not fully understood, and much research remains to be done, Global Climate Change has the potential to cause catastrophic environmental, social, and economic consequences.

The California Energy Commission (CEC) estimated that in 2004, California produced 492 million metric tons of CO₂-equivalent (mmt-eCO₂) GHG emissions (CEC, 2006). The CEC found that transportation is the source of 41 percent of the state’s GHG emissions; followed by electricity generation at 22 percent; and industrial sources at 21 percent.

3.7.3 Regulatory Framework

State

Waste Management

Assembly Bill 939 (AB 939), enacted in 1989 and known as the Integrated Waste Management Act, required each city and/or county's Source Reduction and Recycling Element to reduce the amount of waste being disposed to landfills, with diversion goals of 50 percent by the year 2000. Siskiyou County has an adopted Countywide Source Reduction and Recycling Element that establishes goals and methods for compliance with the AB 939, which establishes 50 percent diversion of solid waste from landfills. Siskiyou County's diversion rate in 2002 was 53 percent, which met the requirement of AB 939 (CIWMB, 2006b). The California Integrated Waste Management Board's Recycling Market Development Zone program helps the County meet this goal. This program includes the entire County and offers low-interest loans up to \$1 million, technical assistance on financing strategies, and assistance on financing strategies, and assistance with marketing nationally and internationally.

Global Climate Change

Concern about the disproportionately negative impacts global climate change is expected to have on the California environment and economy has led the state legislature to pass several climate change-related bills in the past five years. These bills aim to control and reduce the emission of GHGs in order to slow the effects of global climate change, and provide guidance as to determining the impact of individual projects on global climate change.

Assembly Bill 1493

Assembly Bill 1493 (AB 1493) was signed into law by the California Governor on July 22, 2002. This legislation required the California Air Resources Board (CARB) to adopt regulations, by January 1, 2005, that would result in the achievement of the "maximum feasible" reduction in GHG emissions from vehicles used in the state primarily for noncommercial personal transportation. As enacted, the AB 1493 regulations were to become effective January 1, 2006, and apply to passenger vehicles and light-duty trucks manufactured for the 2009 model year or later. AB 1493 prohibited CARB from requiring: (1) any additional tax on vehicles, fuel, or driving distance; (2) a ban on the sale of certain vehicle categories; (3) a reduction in vehicle weight; or (4) a limitation on or reduction of speed limits and vehicle miles traveled.

Although the regulation of tailpipe emissions traditionally is subject to the jurisdiction of the U.S. Environmental Protection Agency (USEPA), CARB has some regulatory authority due to the severe air quality issues in California. In fact, pursuant to the federal Clean Air Act, CARB may implement stricter regulations on automobile tailpipe emissions than the USEPA, provided a waiver from the USEPA is obtained.

In September 2004, CARB adopted AB 1493-mandated regulations and incorporated those standards into the Low-Emission Vehicle (LEV) program. The regulations set fleet-wide average GHG emission requirements for two vehicle categories: passenger car/light duty truck (type 1)

and light-duty truck (type 2). The standards take into account the different GWPs of the several GHGs emitted by motor vehicles, and would phase in during the 2009 through 2016 model years. If implemented, these regulations would produce a nearly 30 percent decrease in GHG emissions from light-duty vehicles by 2030.

In December 2004, these regulations were challenged in federal court by the Alliance of Automobile Manufacturers, who claimed that the regulations attempted to regulate vehicle fuel economy, a matter that lies within the exclusive jurisdiction of the federal government. In a decision rendered in December 2007, the U.S. District Court for the Eastern District of California rejected key elements of the automakers' challenge and concluded that CARB's regulations are neither precluded nor preempted by federal statutes and policy.

While the litigation described above was pending, in December 2005, CARB submitted a waiver application to the USEPA. After waiting nearly two years for a decision from the USEPA, in November 2007, California filed a lawsuit alleging that the USEPA failed to consider the waiver application in a timely fashion. The USEPA's chief promised to issue a decision on the application by December 31, 2007, and, in mid-December 2007, the USEPA's chief fulfilled his promise by issuing a decision denying California's waiver application. The denial was based on the assertion that new federal automobile fuel economy requirements achieve what California sought to accomplish *via* the AB 1493 regulations. The denial of California's waiver application has precluded as many as 16 other states from implementing tailpipe emission regulations similar to those adopted by California under AB 1493. In response to this denial, California filed a lawsuit, with the support of 15 other states, challenging the USEPA's decision.

Shortly after the USEPA issued its denial of California's waiver application, the Senate Environment and Public Works Committee and the House Oversight and Government Reform Committee (both led by Californians) made an official demand for all documents concerning the USEPA's decision to deny California's waiver application. (This request includes communications with the White House.) The USEPA has signaled that it would comply with this request for documents and any further Congressional investigation that follows.

Assembly Bill 32

Citing concerns similar to those enumerated in AB 1493, the California State Assembly also passed the California Global Warming Solutions Act of 2006 in August 2006. Also known as Assembly Bill 32 (AB 32), the law instructs CARB to set reporting requirements for GHG emissions and to devise rules and regulations that will achieve the maximum technologically feasible and cost-effective GHG emissions reduction, achieving a reduction in statewide GHG emissions to 1990 levels by 2020, and further reductions in future years.⁴ While AB 32 sets out a timeline for the adoption of measures to evaluate and reduce GHG emissions across all source categories, it does not articulate these measures itself; instead, these measures will be determined

⁴ Prior to the enactment of AB 32, Governor Schwarzenegger signed Executive Order No. S-3-05 on June 1, 2005, mandating a reduction to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. Although the 2020 target is the core of AB 32, and has been incorporated into AB 32, the 2050 target remains the goal of the Executive Order only, as AB 32 does not speak to the 2050 target.

in subsequent processes. The specific GHG emission reduction measures that will be required of facilities as result of the passage of AB 32 have not yet been set but currently are being devised.

Under AB 32, by January 1, 2008, CARB was required to determine what statewide GHG emissions were in 1990 and set the 2020 limit equivalent to that level. In that regard, CARB determined that the 1990 GHG emissions level (and the 2020 statewide cap) was 427 million tonnes of eCO₂. Accordingly, the current estimate of reductions necessary to achieve AB 32's goal is 174 million tonnes of eCO₂. CARB staff estimates that the proposed discrete early action measures, discussed further below, will provide approximately 16 million tonnes of eCO₂ reductions, while the other early action measures will provide approximately 26 million tonnes of eCO₂ reductions. It is further anticipated that an additional 30 million tonnes of eCO₂ reductions will be secured through the passage of anti-idling measures and AB 1493. The remaining 102 million tonnes of eCO₂ needed to reduce California's GHG emissions to 1990 levels would be achieved through implementation of CARB's Scoping Plan and other regulatory efforts.

In addition, also by January 1, 2008, CARB was required to adopt mandatory GHG reporting and verification regulations. Accordingly, on December 6, 2007, CARB adopted regulations requiring the largest facilities in California to report their annual GHG emissions. These regulations require the facilities to begin tracking their GHG emissions in 2008, with reporting to be submitted in 2009. The facilities identified in the regulations account for 94 percent of California's emissions from industrial and commercial stationary sources, and the regulations cover approximately 800 separate sources (e.g., electricity generating facilities and retail providers; oil refineries; hydrogen plants; cement plants; cogeneration facilities; and industrial sources that emit more than 25,000 tonnes of eCO₂ per year from an on-site stationary source).

CARB also has adopted its first set of GHG emission reduction measures, known as the "early action measures." At this time, CARB has approved 44 early action measures. These early action measures either are currently underway or are to be initiated by CARB in the 2007-2012 timeframe. A subset of these measures, known as "discrete early action measures," must be adopted by regulation by January 1, 2010, as required by AB 32. The early action measures cover a number of sectors including transportation, fuels, and agriculture.

Emission reduction measures that cannot be initiated in the 2007-2012 timeframe will be considered in the Scoping Plan. CARB issued a draft Scoping Plan in June, 2008 (CARB, 2008), which includes recommendations for the following emission reduction programs:

1. California Cap-and-Trade Program Linked to Western Climate Initiative
2. California Light-Duty Vehicle GHG Standards
3. Energy Efficiency
4. Renewables Portfolio Standard
5. Low Carbon Fuel Standard
6. High GWP Gases
7. Sustainable Forests
8. Water
9. Vehicle Efficiency Measures
10. Goods Movement

11. Heavy/Medium-Duty Vehicles
12. Million Solar Roofs Program
13. Local Government Actions and Regional Targets
14. High Speed Rail
15. Recycling and Waste
16. Agriculture
17. Energy Efficiency and Co-Benefits Audits for Large Industrial Sources

CARB accepted comments on the Draft Scoping Plan during the summer of 2008; AB 32 requires that CARB adopt the Scoping Plan before January 1, 2009. GHG emission limits and emission reduction measures from the Scoping Plan must be adopted by regulation on or before January 1, 2011, for enforcement by January 1, 2012. By January 1, 2014 and every five years thereafter, CARB will update its Scoping Plan.

AB 32 specifically allows CARB to consider a market-based compliance mechanism. A Market Advisory Committee (MAC) was formed under Governor Schwarzenegger's Executive Order No. S-20-06 in order to make recommendations to CARB on the design of a cap-and-trade mechanism for reducing GHG emissions. The MAC issued its final report in June 2007 to CARB for consideration. In general, the MAC proposed to include as many sources and sectors in the cap-and-trade program as practicable. The MAC also is recommending that emission allowances be auctioned rather than freely distributed. In addition, the MAC recommended that offsets be allowed to satisfy GHG limits and that linkages to other existing GHG markets be allowed. CARB currently is considering the recommendations of the MAC for inclusion into the Scoping Plan.

Senate Bill 97

With respect to CEQA, in 2007, the State Legislature passed Senate Bill 97 (SB 97), which addresses GHG analysis under CEQA. The bill exempts transportation projects funded under the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006, and projects funded under the Disaster Preparedness and Flood Prevention Bond Act of 2006, from analysis of GHG emissions under CEQA. In addition, SB 97 requires the Office of Planning and Research, by July 1, 2009, to develop and transmit to the California Resources Agency guidelines for the mitigation of GHG emissions and their effects. The California Resources Agency will be required to adopt the regulations by January 1, 2010.

In addition to these bills, the California Legislature has introduced numerous other bills that range in scope from establishing market based compliance mechanisms to reduce GHG emissions to renewable energy standards for utilities in the state. It is unclear which, if any, of these bills eventually will be enacted.

Local

Siskiyou County General Plan

The Siskiyou County Conservation Element (1973) includes policies that assure adequate water supply and sewage disposal. The following Conservation Element objective related to water supply would be applicable to the Program:

- Preserve the quality of the existing water supply in Siskiyou County and adequately plan for the expansion and retention of valuable water supplies for future generations (Siskiyou County, 1973).

Greenhouse Gas Emissions

Siskiyou County does not have any rules or regulations that govern GHG emissions.

3.7.4 Impacts and Mitigation Measures

Significance Criteria

Based on Appendix G in the CEQA *Guidelines*, the Program may be deemed to have a significant adverse effect on the environment if it were to do any of the following:

- a) Conflict with wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- c) Require or result in the construction of new storm water drainage facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects;
- d) Require new or expanded water supply resources or entitlements;
- e) Result in a determination by the wastewater treatment provider that would serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- f) Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs;
- g) Comply with federal, state, and local statutes and regulations related to solid waste.

Greenhouse Gases

Appendix G of the CEQA *Guidelines* sets forth "Air Quality" significance criteria used to evaluate project impacts, and states, "where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make" a

significance determination. However, Appendix G is written for criteria pollutants which are regulated by both an air quality management plan and numerous regulations and standards. GHGs are not criteria pollutants, and do not have resulting regulations or ambient air quality standards. As a result, the thresholds of significance set forth in Appendix G are not appropriate for use in analyzing the potential impacts of the Program on global climate change related to emissions of GHGs. Also, as discussed above in Section 3.7.2, no state or local agency has established significance thresholds for the analysis of GHG emissions under CEQA. Nonetheless, for purposes of this Draft EIR, the following significance threshold has been created and utilized in assessing the impacts of the Program's GHG emissions on global climate change:

The threshold will be determined by whether the Program's GHG emissions impede compliance with the GHG emissions reduction goals mandated in AB 32.

Effects Found Not to be Significant

The Initial Study for the Program (see Appendix D) found that potential impacts of the Program that relate to criteria *a-c* and *e-g* above would not be significant. Therefore, this Chapter only addresses impacts associated with criterion *d* (require new or expanded water supply resources or entitlements), as well as potential impacts on energy supply and emissions of GHGs.

Impact Analysis

Impact 3.7-1: The Program could result in the modification or expansion of existing water supply systems (Less than Significant).

The Program includes several minimization, avoidance, and mitigation measures that would involve changes to the existing systems of water diversion, conveyance, and application for irrigation and stock watering. These include: moving points of diversion; piping and lining ditches; realigning ditches; and removing barriers to fish passage. Several projects are specified, including fish passage at Young's Dam (the diversion dam for SVID); replacement of the seasonal push-up dam for Farmers Ditch with a series of boulder vortex weirs; and replacement of China Cove Ditch with a pipeline to eliminate loss through seepage.

Construction within stream channels is limited in the Program to the period of July 1-October 31. This overlaps with the diversion season. It is possible, therefore, that some water supply construction projects could interrupt service. Periods of service interruption are, however, likely to be temporary and of short duration, and are therefore considered less than significant.

Mitigation Measures

This potential impact was determined to be less than significant. No mitigation measures required.

Impact 3.7-2: Construction activities could inadvertently contact underground utility lines and/or facilities during excavation and other ground disturbance, possibly leading to short-term utility service interruptions (Less than Significant).

Some construction activities associated with Covered Activities would involve earth moving activities. In the course of such activities, underground utility lines could be encountered and damaged or disturbed, potentially interrupting services. Government Code, § 4216 requires pre-construction notification of the Underground Service Administration (USA) between two and 14 days before an underground activity that could disturb utility lines. Because of this requirement, the impact is considered less than significant.

Mitigation Measures

This potential impact was determined to be less than significant. No mitigation measures required.

Impact 3.7-3: Replacement of gravity-based surface water diversions with diversions or wells utilizing pumps, would increase power consumption and air emissions (Less than Significant).

Several of the Flow Enhancement Mitigation Measures contained in the Program's proposed Incidental Take Permit (ITP) involve changes in surface water diversions, including moving points of diversion downstream closer to the point of use, and switching from surface water diversions to groundwater pumping for fall stock watering. Most existing surface water diversions are gravity-based and do not use electric or fuel-powered pumps. The Flow Enhancement Mitigation Measures would in some instances substitute electric or fuel-powered pumps for existing gravity-based systems, either to lift surface water to an irrigation ditch or to the point of use, or to pump groundwater. This would result in increased demand for electric power and fuel.

The number of diversions that would be affected, their location, and the types and sizes of pumps involved in fulfilling the requirements of the Flow Enhancement Mitigation Measures is unknown. For the purposes of this analysis, it was assumed that at the peak of the diversion season up to 230 cfs would be pumped instead of gravity-diverted, and that half of this would be with electric pumps and half with fuel-powered pumps (assuming that electric pumps would be used where possible). As a worst-case scenario, it was assumed that all fuel-powered pumps would use diesel fuel, and that all electrical pumps would be powered from the electrical grid. It was further assumed that the average vertical lift for all pumps would be 30 feet, and that there would be 50 individual pumped diversions. Ten of the pumped diversions would be larger, with a capacity of 15 cfs each, and 40 would be smaller, with a capacity of 2 cfs each.

Based on a rough estimate that five horsepower is required to lift 1 cfs 30 vertical feet, pumping requirements could be met with a combination of 20 ten-horsepower electric pumps and five 75-horsepower electric pumps, and the same number and size of diesel-powered pumps. Using a

standard conversion for horsepower to electrical power consumption, the total power requirement for the electrical pumps would be about 429 kilowatts (kW), or 10,295 kilowatt hours per day (kWH/d) if they were operated 24 hours. These figures are shown in **Table 3.7-1**. Table 3.7-1 also shows the estimated emissions of criteria air pollutants from anticipated diesel pump operation. The table indicates that total emissions of criteria air pollutants would fall well below the significance thresholds set by the Siskiyou County Air Pollution Control District (SCAPCD) (see the Air Quality analysis in Appendix D, Initial Study).

According to PacifiCorp, which supplies electricity to the Scott Valley, there is sufficient transmission capacity to supply the anticipated additional electrical power demand that the Program may create (Chambers, 2007). Some areas of the Scott Valley have limited transmission capacity that may limit the ability to use larger pumps; this would have to be assessed on a case-by-case basis.

Because sufficient electrical transmission capacity exists to supply the anticipated increase in demand, and because the potential for increased emissions of criteria air pollutants falls below SCAPCD thresholds, this impact is considered less than significant.

Mitigation Measures

This potential impact was determined to be less than significant. No mitigation measures required.

Impact 3.7-4: Construction activities and water pumping associated with Covered Activities and ITP mitigation measures would generate greenhouse gas emissions that would contribute to global warming (Less than Significant).

Projects associated with some of the Program's Covered Activities would generate GHG emissions in the form of CO₂. Small amounts of other GHGs could also be emitted. GHG emissions would be generated by construction activities and by water diversions that would use diesel or electric powered pumps.

Most existing diversions are gravity-based and do not use other power sources. As described in Chapter 2, Project Description, ITP Flow Enhancement Mitigations 2 and 5 (Article XIII.E.2(a)(ii) and (v)) would in some instances use electric or fuel-powered pumps in place of existing gravity-based systems, either to lift surface water to an irrigation ditch further downstream from the existing point of diversion, or directly to the point of use; pumps would also be used to pump groundwater for alternative stockwatering systems, and to pressurize more water-conserving irrigation systems.

Several of the Covered Activities in the ITP and Master List of Terms and Conditions (MLTC) involve construction activities, including instream and riparian restoration activities, and construction and installation of gravel push-up dams, headgates, boulder weirs, fish screens, and measuring devices. Similar activities already occur on an annual basis but because the Program

**TABLE 3.7-1
POWER CONSUMPTION AND EMISSIONS FROM PUMPS**

| Diesel Pump Assumptions | | Quantity of Equipment | Project Specific Equipment HP | State Average HP | Equipment Usage - 2007 | |
|---------------------------------|--------|-----------------------|-------------------------------|------------------|------------------------|-----------|
| Equipment | Fuel | | | | Hours/day | Days/year |
| Small Diesel Pumps (2 cfs each) | diesel | 20 | 10 | 10 | 24 | 198 |
| Large Diesel Pumps (15 cfs) | diesel | 5 | 75 | 70 | 24 | 198 |

| Diesel Pump Emissions | Equipment Emissions (lbs/day) – Based on OFFROAD 2007 Emissions Model | | | | | |
|---|--|------|------|-----------------|-----------------|------|
| | ROG | CO | NOx | CO ₂ | SO ₂ | PM |
| Small Diesel Pumps | 7.8 | 26.3 | 45 | 3,560 | 0.1 | 3.4 |
| Large Diesel Pumps | 20.8 | 67.2 | 130 | 10,013 | 0.1 | 10.3 |
| TOTAL Diesel Pump Emissions- lbs/day | 28.6 | 93.5 | 175 | 13,573 | 0.2 | 13.7 |
| TOTAL Diesel Pump Emissions (figures are short tons/yr, except CO ₂ , which is metric tons) | 2.8 | 9.3 | 17.3 | 1,219 | 0.02 | 1.4 |
| Siskiyou Co. Air Pollution Control District Threshold (short tons/year) | 40 | 100 | 40 | NA | 40 | 15 |

Electric Pumps

| Factor | Value | Unit |
|--|------------|---------|
| 1 cfs, 30 ft head to Horsepower | 5 | hp |
| Total Volume Pumped | 115 | cfs |
| Horsepower requirement | 575 | hp |
| Horsepower to kW | 429 | kW |
| Energy Consumption, 24 hours | 10,295 | kWH/day |
| Energy Consumption, Annual (198 days) | 2,038,370 | kWH |
| CO ₂ Emission factor | 0.00036551 | Mg/kWH |
| Annual CO ₂ Emissions | 745 | Mg |
| Project Lifecycle CO ₂ Emissions (10 years) | 7,450 | Mg |

Key:

ROG: reactive organic compounds

CO: carbon monoxide

Nox: oxides of nitrogen

CO₂: carbon dioxide

SO₂: sulfur dioxide

PM-10: Particulate matter less than 10 microns

hp: horsepower

cfs: cubic feet per second

kW: kilowatt

kWH: kilowatt hour

Mg: million grams (1 million grams = 1 metric ton)

Notes:

1 horsepower hour = 0.745 699 861 kilowatt hour (from onlineconversion.com)

CO₂ emissions for electricity generation for California calculated from factors in CA Climate Action Registry, 2007

SOURCE: Chambers, 2007; ESA

specifically includes certain construction activities, and would likely result in other activities such as the installation and operation of pumps that would emit GHGs, these activities and their related emissions are considered to be part of the Program.

Estimated GHG emissions that would be generated with implementation of the Program are presented in **Table 3.7-2**, and are estimated to be approximately 2,358 metric tons per year of eCO₂. Over the ten-year span of the Program, emissions are expected to be 23,577 metric tons of eCO₂.

TABLE 3.7-2
ESTIMATED GREENHOUSE GAS EMISSIONS
FIGURES ARE MILLIONS OF GRAMS (METRIC TONS) OF CARBON DIOXIDE EQUIVALENT

| Activity and Equipment | Annual Emissions Mg eCO₂ | Program Lifecycle Emissions^a Mg eCO₂ |
|---|--|---|
| Emission Sources | | |
| Construction Equipment Emissions | 154 | 1,535 |
| Vehicle Emissions | 240 | 2,402 |
| Pump Emissions: Diesel | 1,219 | 12,190 |
| Pump Emissions: Electric | 745 | 7,450 |
| Subtotal: Emission Sources | 2,358 | 23,577 |
| Emission Reductions and Off-Sets | | |
| Riparian Revegetation and Fencing | -893 | -22,325 |
| Water Use Efficiency (15% Reduction in pump emissions) | -295 | -2,946 |
| Subtotal: Program Reductions and Off-Sets | -1,188 | -25,271 |
| Net Greenhouse Gas Emissions of Program | 1,170 | -1,694 |
| Optional Mitigation Measures | | |
| Use of renewable energy for pumping (10% of pumping) ^b | -167 | -1,669 |
| Use of Biodiesel Blend ^c | -197 | -1,965 |
| Subtotal: Optional Mitigation Measures | -363 | -3,634 |
| Net Greenhouse Gas Emissions with Optional Measures | 807 | -5,328 |

^a Program lifecycle emissions are based on a 10-year period, except for riparian revegetation and fencing, which is based on a 25 years of forest growth.

^b 15 percent water use efficiency factored into this emission reduction calculation

^c Approximately 1,069 of the total annual CO₂ emissions would be generated by diesel fueled equipment (approximately 79 metric tons of the vehicle emissions would be generated by gasoline fueled vehicles). Therefore, the total diesel fuel use for the purpose of calculating reductions associated with use of biodiesel is 949 metric tons, also accounting for a 15 percent water use reduction.

Other aspects of the Program would result in reduction of GHG emissions or emission offsets. Water efficiency measures required by the Program (see Chapter 2, Project Description,) would reduce the need for pumping by an estimated 10 to 20 percent. Therefore, a 15 percent reduction in pump emissions has been applied to the emissions presented in Table 3.7-2.

Two aspects of the Program are intended to result in plantings along portions of the Scott River's riparian corridor. These are ITP Mitigation Obligation E.2.b.iii (Article XIII), which requires the SQRCD to plant 20 acres of riparian forest over the ten-year term of the ITP; and Additional Avoidance and Minimization Measure E (Article XV), which requires SQRCD and sub-permittees to prepare a Riparian Fencing Plan and submit it to CDFG for approval within one year of the effective date of the Program; and in each of the successive nine years to install an average of two miles of exclusionary fencing in areas identified in a priority list that will be developed as part of the plan. Fencing would be approximately 35 feet from the edge of the streambank. Sub-permittees would be required to make reasonable efforts to include the existing riparian vegetation within the fenced area.

As plants grow, they use CO₂ in the process of photosynthesis and store carbon in their cell walls. As a forest matures, a considerable volume of carbon is accumulated and stored in standing live and dead trees, understory vegetation, downed dead wood, litter on the forest floor, and in the soil. The accumulation, or sequestration, of carbon in forests is recognized as an important mechanism for reducing the concentration of CO₂ in the atmosphere, and is an essential tool in combating global warming (Nabuurs et al., 2007).

The U.S. Department of Agriculture has developed methods for estimating carbon sequestration in forests in the United States, as part of the Department of Energy's Voluntary Reporting of Greenhouse Gases Program, also known as the 1605(b) Program (USDA, 2007). The simplest of these methods uses "look-up tables" in which the average amount of carbon in a forest stand (referred to as "carbon stock") is given for different regional forest types in the years following a clearcut. This method was used for estimating the amount of carbon that can be expected to be sequestered in the riparian forest areas that will be revegetated and protected under the Program.⁵ The results for carbon sequestration are shown as the total amount of carbon, expressed both as carbon contained in plant matter, and its CO₂ equivalent, that would accumulate during the 25 years following revegetation and fencing. The reforestation activities associated with the Program will sequester approximately 22,325 metric tons of CO₂ equivalent (**Table 3.7-3**).

Table 3.7-2 indicates that over the ten-year life of the ITP, Program activities will result in the emission of 23,577 tons of CO₂. Table 3.7-2 also shows that water conservation and reforestation measures that are part of the Program will result in reduction and offset of about 25,271 tons of CO₂ equivalent. As a result, the Program is expected to result in a net decrease in GHG emissions

⁵ Table A21 from USDA, 2007 provides estimates of carbon stock of alder-maple stands on forest land after clearcut harvest in the Pacific Northwest, western area. For the analysis, it was assumed that areas that would be revegetated under the Program would have a carbon stock equivalent to a recently clearcut forest, except that carbon stored in down dead wood would be less. For areas that would be fenced, it was assumed that the carbon stock at the time of fencing would be equivalent to a forest 15 years after clearcut.

**TABLE 3.7-3
CARBON SEQUESTRATION FROM REFORESTATION**

| Program Element | Description | Assumed Carbon Stock at Beginning of Program ^{1,2} (Mg per Acre) | Assumed Carbon Stock 25 years after beginning of Program ¹ (Mg per Acre) | Increase in Carbon Stock (Mg per Acre) | Area Affected (Acres) | Lifecycle Increase in Carbon Stock (Mg) | Carbon Dioxide Equivalent (Mg) |
|---|---|---|--|---|-----------------------------|---|---|
| SQRCD Mitigation Obligation b.iii | Riparian forest planting | 9.4 | 53.4 | 44.1 | 20 | 881 | 3,233 |
| Additional Minimization and Avoidance Measure E | Install 2 miles per year (years 2-10) riparian fencing 35 feet from channel | 22.1 | 90.6 | 68.5 | 76 | 5,202 | 19,092 |
| TOTAL | | | | | 96 | 6,083 | 22,325 |

Key:

Mg = million grams, or metric tons

Notes:

¹ Values for carbon stocks from USDA, 2007, look-up table A21 for Alder-Maple forest stands in the Pacific Northwest, West region.

² For areas targeted for planting assumes no standing vegetation at beginning of program look-up table value adjusted to account for assumed lower amount of down deadwood; for areas targeted for fencing assumes forest stand is equivalent to 15 years after clearcut.

SOURCE: CDFG, USDA, 2007

over the life of the Program, and so will not impede compliance with the GHG emissions reduction goals mandated in AB 32. Therefore, any potential impact the Program will have on global climate change is considered less than significant.

Mitigation Measures

This potential impact was determined to be less than significant. No mitigation measures required.

Additional Mitigation Measures Identified in This Draft EIR

The mitigation measures discussed below were identified as part of this Draft EIR. While these measures are not required to reduce this impact to less than significant, they are technically feasible. Still, CDFG does not have the statutory or regulatory authority to impose these requirements. As a result, they will only be implemented voluntarily or by another regulatory agency (e.g., CARB) that has the authority to require them, whether now or in the future.

Mitigation Measure 3.7-4a: Program participants are encouraged to fuel all diesel equipment, including pumps, vehicles, and construction equipment, with a minimum 20 percent biodiesel (maximum 80 percent conventional diesel) blend (B-20). B-20 biodiesel is currently available commercially in Siskiyou County.⁶ A blend of 20 percent biodiesel will reduce CO₂ emissions by approximately 15 percent (USDOE, 2005), although with a slight increase in NO_x (the increase in NO_x emissions would not exceed significance thresholds established by SQAPCD – see the emissions calculations in the technical appendix to the Initial Study in Appendix D).

Mitigation Measure 3.7-4b: Renewable energy sources such as photovoltaic or wind power could be used to power some pumps installed to meet Program requirements for stockwatering and moving points of diversion downstream.

Table 3.7-2 shows the reduction in emissions achieved by using renewable energy sources for 10 percent of the projected increase in pumping due to the Program, and from the use of biodiesel.

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California Energy Commission (CEC) – See State of California

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⁶ B-20 is currently available locally at Cross Petroleum, 1012 North Mount Shasta Boulevard, Mount Shasta, CA 96067.

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